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BLACK
LACQUERS



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BLACK
LACQUERS



THE EGYPTIAN LACQUER
MANUFACTURING COMPANY
5 EAST 40TH STREET NEW YORK
CHICAGO
LOS ANGELES SAN FRANCISCO

BLACK LACQUERS

IN the past, the use of black lacquers was limited, and they were mostly used in the decoration of fixtures or ornaments, intended for interior decoration. These blacks were beautiful in appearance, but could not be handled or cleaned or even dusted. They were usually placed and left permanently attached to the wall or ceiling and out of the way of being jostled; in those days, black lacquer finishes were not seriously considered for purposes where the article might be subjected to use or wear.

In recent years there has been a great change. These lacquers are being adapted daily to new purposes, and are applied to all kinds of metal, metal finishes, leather, paper, wood and glass. Their purposes are practically limitless, and any metal may be prepared by preliminary treatment with chemicals or fillings to receive these lacquers. Similarly, any wood, soft or hard, may be treated with a filler, and thus be prepared to hold the black lacquer upon its surface and retain the exact black finish and effect with which it is finished. These effects may be semi-dead, mat, bright or very glossy.

The lacquer finish produced with black lacquer is as nearly permanent and indestructible as any finish can be made, but in order to produce such a lasting finish the lacquer must be used with an intelligent knowledge of its application.

A point greatly in favor of the use of black lacquers is the easy method by which they can be applied; their air-drying qualities add another point which is much appreciated—for many finishes may be air-dried which otherwise would be injured, especially if they had to be submitted to the handling necessary for heat-drying and baking.

While all our black lacquers may be air-dried and thus produce very good and satisfactory results, the subjection of the goods to graduated heat, never running

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above 130° F. for a space of no more than one-half hour, assists the lacquer to set quickly and adds an additional hardness to the finish. This is of special value where the work is heavy and marring is apt to result from handling.

In appearance the lacquer is far superior to the finish procured by the use of several applications of the ordinary baking material; there is a total absence of the bulky look, and the cost of its application is far less than that of either enamel or japan, perhaps not in the cost of the material applied so much as in the fact that with lacquer the work is handled very much more quickly and requires much less time in labor.

As in the case of colored or transparent lacquers, black lacquers are divided into three distinct types—brush, dip and spray.

Brush Lacquers are applied with a camel's hair brush; they have a free flow and will set slowly enough to insure uniformity of distribution. They need only be applied and surplus removed; the lacquer then takes care of itself and forms on the lacquered article in a uniform body.

Dip Lacquers are largely used, and no matter what the shape or size of an article, they can be applied to suit the smallest or largest surface, whether round, square, flat, or with corners or indentations that are difficult to reach. For small goods, such as pins, buttons, eyelets, tacks, etc., which must be done thousands at a time, dip black lacquers are made to be applied so that the surplus or drip can be removed by use of the tumbling barrel or centrifugal machine. These dip lacquers have strong adhesive qualities that hold them to the metal, and give it a good covering coat that will not be thrown off so as to expose or injure the metal finish in the movement of packing or handling the goods. The contents of a black lacquer dip tank should be strained at least once a week through a filter of a number of thicknesses of cheese cloth, in order to remove any dust or dirt accumulation carried in by the work or entering from the surroundings. This applies to the use of all black lacquers.

The spraying of lacquers surpasses other methods both in the quality of the finish obtained, and in point of cost. Flat and large surfaces can be black lacquered as simply with the spray, as the work can be done on round and small objects. There will be no streaking or running

or bare edges; the backgrounds will be covered without "creeping" in corners or leaving uncovered lines where a vacuum has prevented proper adhesion at abrupt angles. With the spray there is no article that cannot be black lacquered; it is being universally used in the finishing of metal, wood, leather, paper, cloth, slate, fibre and a variety of other goods, whereon a high grade dead or semi-dead black finish cannot be equalled by any other black material made.

The spray, with the blacks or other colored lacquers, can be used for blending one color with another, or for shading on metal, paper, wood and other material, where varicolored effects are desired. This class of finishing can be done with the spray by a lacquerer of very little experience, and takes the place of the same class of ornamentation which has been heretofore obtained by old laborious and expensive processes.

Unless the spray machine is of the hand cup type, it should have the automatic agitator attachment, the valve of which should be opened just enough to keep the lacquer bubbling nicely, a perfect mixture will then be maintained while using.



II

Black Lacquers
versus
Japan and Enamels

BOTH japanning and enameling are slow processes, requiring large factory space, expensive equipment and a regular outlay for gas or other fuel. They have never been a general success, since more depends on the skill of the operator in regulating the heat in baking them than in the actual manufacture of the goods. Variations in temperature will cause a variation in the finishes as they come from the oven with each different baking.

This is not so with black lacquers where the original finish of the lacquer remains the same under all conditions of temperature.

If the same preliminary steps are taken in preparing metal for the reception of black lacquers as for japan and enamel, just as durable and lasting results will be obtained and in a very small fraction of the time required for its application and at the minimum cost in labor, when compared with either of the other finishes. The best class of japanning on iron castings, or hot or cold rolled steel, requires two coats of either thin japan or some other similar preparation, each coat requiring several hours' baking, and usually a delay of several days, before the surface of the last coat is in condition to be rubbed down.

The same results may be procured with black lacquers if used in connection with Egyptian Primers, Fillers and Glazes. (Send for pamphlet, "Egyptian Primers, Fillers and Glazes.")

On smooth surface metals, one or two thin coats of primer can be applied as a base for the final coat. In many cases one coat of the lacquer will be found sufficient to give the desired finish, and the entire process is completed in a few hours. One to five days will be required to secure the same finish with japan, and all the equipment necessary for the latter will be eliminated if lacquer is used to produce the finish.

If desired, the metal can be given light copper plate and then oxidized as a base for the finishing coat of black lacquer.

For high lustre finishes such as are obtained with enamels, our Glossy Black Lacquers are used, and to increase the brilliancy and high lustre, as with enameled goods which are given a finishing coat of baking varnish, we furnish Egyptian Finishing Enamel for use over the Glossy Black Lacquer finish as varnish is used on the enamel.

Glossy Black Lacquers are also used on work where high lustre is required, such as on dynamo and motor parts and are of special value for this purpose. They have taken the place of japanning as they obviate the slow process of japan work, and produce a lustrous and hard finish.

They may be air-dried or dried with heat, and, while the finish is practically the same, in some cases it is claimed that the heat makes the lacquer dry harder, for the quicker the lacquer sets, the better the finish. To prevent the finish from becoming brittle do not use more than 120° F.

Glossy Black Lacquers are also used extensively on art metal goods and metal buttons, where they have superseded the slow process of japanning.

Metal buttons were formerly either enameled or japanned, but by using Glossy Black Lacquers with comparatively little thinner, a body sufficiently heavy more than equals the enamel or japan. One quart of thinner to a gallon of lacquer is a practical proportion.

Even the skilled japanner has found a solution of his greatest trouble in the use of an opaque black lacquer on numerous articles. It acts as a base for the japan and gives the japan sufficient elastic qualities to prevent chipping or flaking when exposed to the extremes of heat and cold.



III

The Preparation of the Metal for the Application of Egyptian Black Lacquer

AS in other finishes, the life of Black Lacquer depends very largely on the preparation of the article upon which it is to be used preliminary to receipt of the lacquer coat. This preliminary treatment has received great attention from metal decorators, and it is in this knowledge that the successful use of black lacquers must be found.

To obtain the greatest wear and durability of a black lacquer applied to metal goods, it is essential that the metal should be first cleansed, then oxidized; and for this purpose any of the many oxidizing processes which will create a black surface, can be used. Thus brass can be oxidized with the use of a black nickel plating solution, or with the ammonia copper dip; the oxide procured from either will make a very good base upon which to apply the black lacquer.

The sulphuret of potassium dip will oxidize copper, bronze, copper plated iron, steel, lead, zinc, or any other metal which can be copper plated. This is a very popular oxidizing solution and its cost is very small. Black lacquers applied over the above will create a most durable and lasting finish.

It is usual, but not necessary, to first prepare brass with a black metallic oxide applied with heat, when used on desk telephones and other telephone apparatus, electrical appliances or instruments for laboratories. When these are finished with our Black Lacquers they can be handled hundreds of times daily without in the least affecting the lacquer finish. When black japan or enamel is used for this class of work, it is usually unsatisfactory, for neither will adhere well to brass. Brass is preferred to steel on account of the latter rusting, and it has always been a problem to get a black finish that will stand on such brass goods. The black which has been applied with heat underneath a lacquer aids in the creation of a finish which is unsurpassed, and when this is protected with our Rubber Finish Lacquer it cannot be equalled. This applies to other brass goods frequently coming

into contact with the hands, such as instruments, portable lamps, door knobs, or other hardware requiring an equally permanent and durable black finish.

By adding this step, it is true, the cost is made slightly higher than that of the ordinary oxidizing process, but the finish thus obtained and the wearing qualities of the black will well repay for the slight extra work and outlay. In this connection, the following process is recommended: First, sandblast the brass, do not clean it in the same way that you do for plating; next, put the work on a hot plate, which can be made by laying a piece of sheet steel on a gas flame. When the metal is warm apply the following solution with brush, or by dipping the work into it: Make a saturated solution of nitrate of copper and water; also make another saturated solution of nitrate of silver and water. These are stock solutions.

Then the solution to apply to the brass is made by using two parts of the nitrate of copper solution and one part of the nitrate of silver solution. Then dilute the amount used with twice as much water. This resulting solution is applied to the brass. Then burn it on the hot plate. It is green when applied, then turns brown, and then black. Take the work off the plate as soon as it gets black, and brush off the surplus smut. It then has a metallic black surface, which has been burned into the brass. After it is cool, hang the work in the sulphuret of potassium oxidizing solution for about five minutes. It can then be dried and is ready for the black lacquer to be applied by any convenient method. It is through such preliminary treatment that the use of black lacquer has become popular and that it is rapidly replacing the use of enamel and japan for the finer class of metal goods.



IV

Directions for Mixing
Thinner with Black Lacquer
and Its Effects on
The Resulting Finish

TO THIN DOWN A BLACK BRUSH LACQUER only enough thinner should be used with it to have a camel's hair brush pass over the surface without dragging or pulling. It does not have to be "worked" as paint does; it need only be flowed on and the surplus quickly taken up. More brushing than to accomplish this will cause streaking and the setting up of fine hair-lines.

TO THIN DOWN A BLACK DIP LACQUER: The thinning of black lacquers should be decided to a great extent by the operator applying them. This can best be determined by the occasion. It is advisable at all times to use a black lacquer as heavy as it can be properly applied on work. A black lacquer that is to be used for dipping should contain only enough thinner to have it flow over work evenly and carry off the surplus drip. It will then drop off and take up without leaving an abrasion or lump at the points from which it has fallen. Or have it so thinned as to carry the drip to a place where it can be advantageously removed with a brush. The shape, the size, the manner in which work has to be hung to drip, the condition of the surface (whether dead or polished), and the kind of oxide, if any, that is on the work, are the real things that govern the thinning of black lacquer for dipping. It never should be made too thin to make the work easy. The operator should do his part and use his best efforts to have the lacquer go on work heavily enough not to impair the sensitive solvents that are put into it to give adhesiveness, hardness and proper finish. If an excess of thinner is used it may so dissipate the gums as to cause peeling and brittleness. Very often an attempt is made to dip articles that should be brushed or sprayed, and in trying to get through such work the lacquer is thinned until it has been reduced to a point of uselessness, and then the lacquer either goes on the work with a "watery" appearance or peels off. If it is found impossible to get the proper flow with the lacquer mixed

to cover well and have a body in its full strength, one of the other methods of application should be used.

To THIN DOWN A SPRAYING LACQUER: In thinning black lacquer for use in a spray only enough thinner is necessary to have sufficient body to insure the air raising it to the point where it is atomized. If it is found necessary to make it so thin as to run when it is applied, the fault is in the air pressure, and this should be increased so that the lacquer will spray into a body where it will not run. This pressure should also be maintained at a standard, or the quality of the lacquering will change with the change in pressure. In thinning for spray use much depends on the particular spray being used and the pressure available. A black lacquer is often condemned as not right for spray work on account of poor air equipment.

These proportions can only be used to make a trial start; for modifications are the rule—not the exception. The proportions change not only with the kind and quality of finish but with the nature of the metal and the metal finish. As these vary in quality and composition the proportions of lacquer and thinner have to be varied, and this is even more so when it becomes necessary to match some given finish—here many trials are often necessary to bring desired results. Then as to weather conditions with their influence—in crisp, bright weather with the air filled with clear ozone, the proportions of mixture for all lacquers are different from what they are in damp, depressing and sultry air.



V

Some Practical Results Secured with Black Lacquers

Black Lacquer on Slate

THE japan process on slate is to give three coats of japan, baking each coat five hours, letting it stand three days, and then rubbing down by hand and following with an oil finish. This process alone is costly, not including the cost of room and the extra time it takes to get the work through the shop. The Egyptian Black Lacquer process as applied to slate is less expensive and not so complicated.

It is necessary that the slate be quite dry before it is coated with the lacquer. If taken from the open yard, where it has absorbed much moisture, it should be dried out in the japan oven for several hours before lacquering. Ordinarily this is not necessary, because in the process of drilling, etc., the slate is usually kept in the shop for a week or two, and the ordinary temperature of the shop is sufficient to dry it out.

The surface of the slate is covered with white dust from the drilling, and this should be removed by means of a stiff fibre scrubbing brush, and then dusted with a duster.

Small blocks can be either dipped or brush lacquered.

The large slabs, composing a switchboard or switch-table, are placed face up on two wooden horses, cleaned as above, and the lacquer applied by means of a five or six-inch flat brush. The lacquer must be applied quite heavily and very rapidly, first around the edges and then over the surface. If flowed on in this way it gives the operator time to smooth out and spread the lacquer before it sets and leaves a surface without lap, streaks or other defects.

The slabs are allowed to rest on the horses for a few moments until the lacquer has set and looks flat, and then set on end in the japan oven, the door being left open. While it takes a little longer for the lacquer to thoroughly dry, just as good if not better results would be secured if the lacquer is allowed to dry in the ordinary temperature of the room.

Where an extra fine finish is desired, or where the slate is to be erected in an exposed place, a subsequent

coat of paraffine wax is applied to the surface. The article should be heated to a very hot state and the wax in a very thin coat should be applied while smoking hot, and then wiped off with canton flannel. Surfaces so finished will not show greasy finger marks and will stand outside exposure.

Practically the same color is secured as by rubbing down japan. The latter is much more easily marred than the lacquer finish, and if damaged in the assembling of the parts, the japan finish cannot be repaired. If the lacquer is damaged or the slate chipped, a second coat of lacquer can be applied in a few moments at the cost of a few cents. If, in assembling the switchboards, greasy marks are left on the work, they may be removed by lightly rubbing them with a rag moistened with gasoline. Practically all switch blocks (small) are now finished by this method and either dipped, brushed or sprayed.

Bower Barff

The genuine bower barff is a matted black finish for iron and steel. It is produced by heat and steam liberating the oxygen from the iron and forming magnetic oxide.

The oven and other equipment required for this finish is not practicable in the average factory, as the demand for goods in this finish, outside of builder's hardware, is not nearly commensurate with the cost of providing and maintaining a plant for this purpose.

The method involves the subjecting of the metals to an intense heat.

This heating, the formation of the oxide and subsequent cooling, so change the molecular structure of the metal, that thin cast and sheet steel or iron is warped out of usable shape.

This necessitates using much heavier and otherwise useless metal. Now thin casting or sheet metal can be lacquered to match the bower barff perfectly, eliminating expense of heavy castings, etc., widening field of finish, etc.

A number of imitation finishes are made by using solutions of sulphur and linseed oil; sulphur, graphite and turpentine, and other similar solutions. A coating of these mixtures is applied and the metal heated to a red heat to burn it in, or else the goods are baked in a

muffle. But these are all slow and uncertain processes and some kind of special equipment must be provided to do this work.

The method of obtaining this finish most in use, and for which any plating room is equipped, is by using a dead black or bower barff lacquer. The lacquer has a number of advantages over the above described processes which can only be used on iron or steel; whereas, the lacquer will give the finish on any metal.

It can be used on polished or unpolished iron or steel, but on high grade goods it is advisable to copper plate and oxidize the iron or steel. The oxidation furnishes a surface better calculated to take black lacquer both in point of color and as an adhesive base. This black lacquer can also be used on copper, brass, bronze or white metals, either directly on the metal or over an oxide on the same produced with any black dip or electro deposit black.

The use of dead and glossy black lacquers for a long time was confined to art and ornamental goods, their great value as a finish for more practical purposes not being recognized until it became generally known that they were not only easy to apply and quick to dry, but that they also produced a finish of great durability and that the dead blacks could be used as a finish without the metal goods, they were to be put on being separately prepared the same as is necessary with all baking black materials. The dead black lacquers are now universally used for finishes on metal goods, from the roughest to the finest polished surfaces. They make rich finishes on all kinds of goods and are applied and dried quickly without taking up room in drying, as do the slow setting gum and oil blacks.

Dead black lacquers retain the same finishes and deadness on cast as well as on polished metals. The finishes on sand marked castings, scaled steel, on chased designs or highly polished surfaces are of equal richness. With such a wide range of adaptability they are now the most popular blacks in use.

Black Lacquers have not stopped at finishes for all kinds of metal goods, but have pushed themselves into the hands of the wood finisher, and have accomplished as much for him as for the metal worker.

Our line of dead and glossy black lacquers is made to cover the entire needs of all lines of manufacture wherein a black finish can be used.

Black Lacquers on Wood

Egyptian Black Lacquers are being used extensively on wood and are particularly adapted for such work as electrical switch handles, edge tool handles and similar articles, as well as brush backs, picture and mirror frames. The material is coming into general use, as it has many advantages in hardness, lustre and elasticity over the varnish finishes.

The solvents used in the lacquers are anhydrous, hence do not swell or raise the fibre of the wood, but leave the surface as it comes from the lathe or sand-paper, giving a much smoother finish with less material than that obtained by any other process.

Egyptian Black Lacquers penetrate the wood evenly and to a great depth and as a consequence are not easily chipped or marred. They can be used with little or no thinner for brush work on wood, and with about one quart thinner to a gallon of lacquer for dipping. The best results are produced on birch, maple and similar woods, and the finish is a rich deep black. As for wearing qualities, brushes probably present the best recommendation. Brushes have been in constant use for years, and have been dipped in water and generally knocked around in the bath room for that period of time; yet the lacquer shows little or no wear, it has shown no indication of streaking or peeling, and does not soften by being exposed to the action of water.

Where it is desired to use Egyptian Black Lacquers on soft woods or open grained woods such as oak, mahogany or chestnut, better results will be obtained if the work is first filled with Egyptian Wood Filler. This will form a tough, durable foundation upon which to apply the finishing coats and will result in a finish glass-like in smoothness.

Imitation Oxidizing

For imitation oxidizing, black lacquers can be spotted over a coat of brass or copper powder, or shaded from the centre of a shell, or around the edges, or worked along raised figures or on backgrounds to suit design. An air brush is best for this work, as the flow can be controlled to get the gradually shaded effects of brush relieving on chemical oxides.

Among the most popular of bronze powder and black lacquer finishes will be found the Spartan Silver, Spar-

tan Copper, Spartan Brass, Spartan Gold, and Venetian Bronze. These finishes and others are described and explained in our pamphlet, "Bronze Powder and Enamel Finishes" which we will be pleased to send you on request.

DESCRIPTION OF GRADES

EACH grade of Egyptian Black Lacquer has been worked out in imitation of some natural chemical or pigment black, and there is no known black finish which cannot be reproduced with one or other of these lacquers—they are made in a great variety of finishes to imitate any degree of black known, from the highest and finest rubbed cabinet glass to the deepest mat.

Following is a list and brief description of several grades of Egyptian Black Lacquers, commencing with our Glossy Black Lacquer No. 1, followed by numerous other grades placed in order with reference to their degree of finish. These grades are standard and are always carried in stock. Special grades for any requirements can be made on short notice, and we will welcome inquiries regarding your black lacquer problems, and be pleased to send samples of lacquers which we will make especially for you, to conform to your most exacting specifications.

GLOSSY BLACK LACQUER No. 1—Especially recommended for brush and dip application. Gives a high gloss and covers well in one coat. Is successfully sprayed on small articles such as celluloid novelties.

GLOSSY BLACK SPRAY LACQUER NO. 1—A high grade, all around lacquer, with good gloss and quick drying.

GLOSSY BLACK SPRAY LACQUER NO. 6—An extra glossy material, recommended for use when a heavy bodied lacquer is needed.

SPHYNX LACQUER, GLOSSY BLACK—A medium grade lacquer of type of Glossy Black Lacquer No. 1, used when a less expensive material is required. Especially recommended for wood and tin.

NIGRO JAPINE—Highest grade Glossy Black Lacquer for brush and dip applications.

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GLOSSY BLACK ENAMEL No. 44—A hard, tough finish with good body.

SEMI-GLOSSY BLACK LACQUER—A little duller than the glossy grades.

RUBBER FINISH LACQUER L X—Somewhat glossier than the regular Rubber Finish.

RUBBER FINISH LACQUER L—Can be brushed, sprayed or dipped, and is one of the most durable black lacquers made. The finish is approximately that of hard rubber. Is used largely in the electrical trades for switchboards and telephones; also suitable for use on tools, optical instruments, magnetos, etc.

ANTIQUE BLACK LACQUER No. 1—This gives a mat black finish that will not rub to a lustre in use. It will apply either by brush, spray or dip to a uniformity that will have no streaks or lumps; it is adhesive and hard and will not chip.

ANTIQUE BLACK LACQUER No. 2—A similar grade to Antique Black Lacquer No. 1, but cheaper. A finishing enamel should not be used over this.

OPTICAL BLACK LACQUER B O—Is what its name implies, a very dull black for use on interior of optical instruments, and wherever a finish that will not reflect light is required.

RUBBER FINISH LACQUER L 15—A good medium priced lacquer, extensively used for a variety of purposes; hardware, lamps, etc., etc. A finishing enamel should not be used over this grade.

EBONY BLACK LACQUER B S—A heavy bodied dull black lacquer, especially suitable for use on wood. Can be sprayed, dipped or brushed.

IMPORTANT

THE STORING OF BLACK LACQUERS:

The keeping of black lacquers in stock is very important if they are to remain at their best, and be always ready to work out with the best results. While in a storeroom they should be kept well corked, and in a room which has as nearly as possible a steady temperature around 60 to 70° F. and away from steam pipes and radiators.

SHAKE BEFORE USING: Before taking black lacquer out of a can it should be well shaken up and stirred so as to make a thorough mixture. The heavier ingredients will precipitate to some extent when a can of lacquer has been left undisturbed for some time, and unless the proper mixture is restored by agitation the lacquer poured from the top is likely to be thin. When used in this condition it does not have the binding body which it should have, and hence often peels.

